ANNUAL REPORT FOR THE YEAR 1965
OF
BIRLA INDUSTRIAL & TECHNOLOGICAL MUSEUM
19-A, GURUSADAY ROAD, CALCUTTA-19
COUNCIL OF SCIENTIFIC & INDUSTRIAL RESEARCH
GOVERNMENT OF INDIA.

ANNUAL REPORT OF BIRLA INDUSTRIAL & TECHNOLOGICAL MUSEUM FOR THE YEAR 1965

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A. AIMS & OBJECTS.

The aim of this museum is to bring the message of science to the reach of common man. Keeping this aim in view the museum depicts advances in technology and their application in industry for the welfare of mankind. It encourages young people to become inventors and technicians by developing their creative faculties and their spirit of free inquiry. This is achieved through the medium of permanent galleries and several extension service activities.

B. MUSEUM GALLERIES

In all ten galleries have been set up. They are:

1. Nuclear Physics. 2. Petroleum. 3. Copper. 4. Iron and Steel. 5. Mining. 6. Popular Science. 7. Communication. 8. Television. 9. Electricity. 10. Motive Power.

Of these the last mentioned is under reorganisation. Also opening of a new section on 'Mathematics' under 'Popular Science' section is in view.

There are in all sixteen Guide Lecturers provided in all the galleries of the museum for proper explanation and guidance of the visiting public. For security measures a gallery attendant is attached to each gallery as a supporting staff, who assists in general maintenance of the gallery.

Attempts have been made to display as many working models as possible and facilities are provided for all the visitors to operate these by themselves.

C. MOBILE SCIENCE MUSEUM

One notable addition in the educational activities of the museum was the Mobile Science Museum which was inaugurated by Shri P.C.Sen, Chief Minister, Govt. of West Bengal at Ramkrishna Mission School in Narendrapur near Calcutta on November 17, 1965. This mobile museum will visit the distant suburban towns and villages and will take the message of science to the door of co-

contd...

mmon man.

The first exhibition is on 'Our Familiar Electricity' consisting of thirty sets of different exhibits. This exhibition explains to the visitors, some common electrical appliances domestic fittings etc. Electricity being very useful in everyday life, this exhibition has made an impact on the visitors.

About 2300 people, mostly students visited this exhibition at Narendrapur.

From last week of November upto the first week of January this exhibition has travelled in various schools, for a week at each place. Daily, about 4000 visitors, including industrialist educationists, teachers and mostly students visited this exhibition.

D. ATTENDANCE

During the year 1969, the total attendance of visitors was 1,69,176 including 191 organised groups covering 4,469 students from different institutions of the country. Attendance at the film show was 33172.

E. EDUCATIONAL ACTIVITIES

i) Film Shows:

The necessity of adopting audio-visual methods in imparting knowledge to the people is well recognised. Film shows are regularly arranged daily on scientific and technica subjects, in the museum auditorium for students and other vis tors. These are well attended. Besides seven regular shows pe week, special film shows were arranged by acquiring some spec films from U.S.I.S. Film Division, Govt. of India, British I ormation Service etc.

ii) Popular Lectures and Seminars:

Six popular lectures were arranged in the audit rium by inviting some eminent scientists and speakers to tal on different branches of science.

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In all 26 students from different schools in and around Calcutta participated. Many educationists and heads of schools attended the same. Prizes will be awarded to the winners and certificates to all the participants.

iii) Lecutre Demonstrations:

Six lecture demonstrations on 'Principles of Electrical motors & generators were arranged in the museum for various schools. Various other sets are being planned on 'Heat Engines', 'Human Eye', 'General Physics' etc.

iv) Training facilities

Twelve students of department of museology, University of Calcutta, attended a week's training course in this museum. They were given practical training in diorama making, display, lighting, tools and machines, show case designs, labelling etc. Film shows and special discussions were also arranged for them.

(v) 'Make your Own Telescope'
Exhibition and Popular Lecture

Above exhibition was opened by Dr. B.D. Nag Chowdhury, Director, Saha Institute of Nuclear Physics, Calcutta at BITM on December 28, 1965.

Among the popular exhibits were charts, diagrams, books and other publications on telescope making, telescope mirrors and other parts made by amateurs.

In the evening, a demonstration lecture on telescope making was delivered by Shri K.Ray of National Register Unit of Council of Scientific & Industrial Research.

Within the last two years, about twenty persons participated actively in grinding glass discs to make reflecting telescopes.

(vi) Sky observation programme

A special programme of sky observation through a 3" telescope for the evening class students of Birla Planetarium, Calcutta was arranged in museum premises on November 17, 1965 at 6 p.m.

Three films on Astronomy were shown.

contd.

(vii) Exhibitions

Several temporary exhibitions were arranged. They were :

(a) A seminar and exhibition, organised by the Museums Association, West Bengal, was held in the Museum from 27.2.65 to 6.3.65. Exhibition mainly dealt with photographs of important collections of the leading museums of West Bengal.

(b) A photographic exhibition illustrating the importance of museums in education was held at Birla Industrial and Technological Museum in collaboration with British Council from May 1 to 9, 1965 for one week.

A film entitled "London Museum" was also shown during this period.

(c) Birla Industrial and Technological Museum participated in the annual exhibition of the Childrens' Little Theatre, Calcutta. A set of exhibits specially prepared for the occasion were displayed.

(viii). Technical Library

It has been opened to the public from July 6, for reference work from 10 A.M. to 5 P.M. on all week days except holidays. So far 70 members from the public have been enrolled.

The stock of books and periodicals upto November, 1965 is as follows:

Books	...	3744
Pamphlets	...	1774
Periodicals	...	296
Journals Received		
Subscribed	...	61
Complimentary	...	68
Newspapers	...	4
16mm. Technical films ...	...	106

Library also stores photographs, cuttings from News papers, lantern slides, maps etc.

F. CHANGES IN MUSEUM PROGRAMME

From July 6, 1965, following changes have been introduced.

(a) Revised visiting hours

The museum is open from 10 A.M. to 5.30 P.M. on all

cont'd...

(b) Television Demonstration

It is held thrice daily.

G. MODELS, EXHIBITS ETC. FABRICATED AT THE MUSEUM:

(A) Designs, drawings and tracings for models, dioramas, animated models, pedestals, stands, cabinets etc. ... 80

(B) Cabinets, Pedestal stands, as well as maintenance work involving repair, installation, writing of caption etc. 1,60

(C) Following Models, diagrams and animated models fabricated at museum are given below, gallery-wise:

(a) Mining Gallery:

(1) Working model of surface layout of a coal mine

This is a surface layout of a partly mechanised coal Mine showing how the gravity is utilised along with Creeper, Tipler, Push back arrangement etc for the handling of Coal on the surface.

(2) Full size sculpture of a Miner

This is a Plaster of paris cast of a traditional Indian miner with a pick and an oil lamp.

(3) Replica of a Belt Conveyor

The working belt conveyors are shown in side the model of a coal mine for the transportation of Coal from the working face to the pit bottom.

(4) Lee Norse Miner

This is a modern continuous miner which is used for heading driving.

(5) Replica of a Dumper Truck

The dumper trucks are mainly used for transportation of debris from the quarries.

(6) Replica of a Power Shovel

This machine is used for loading dumper car mechanically.

(b) Popular Science Gallery

(7) Replica of the model of Leeuwenhock's microscope

This microscope consists of a lens (about the size of a mustard seed) and adjustable sharp pointed needle on which to place the specimen.

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8. Doubly suspended Pendulum

A simple pendulum swings in a straight line. If suspended by two strings fixed to two points above and joined at a certain length to come down as one string the motion of the pendulum takes up a resultant motion forming different patterns called Lissajou's figures.

9. A model on Polaroid:

Polarised light passing through a double refracting medium splits into two components and while passing through the analysing Polaroid sheet recombines to produce different colours.

10. A model on 'Centre of Gravity':

A double ended cone placed at the bottom of an incline has its Centre of Gravity at the highest point. So to lower it, the cone moves upwards to the top of the incline. Apparently this is paradoxical.

c) Electricity Gallery:

11. Effects of statical electricity:

Hanging pith balls are charged with statical electricity and mutual attraction or repulsion shown. Point discharge of charges is also demonstrated.

d) Petroleum Gallery

12. Working model of Aero-Magnetic Survey.

This working model is showing the deflection of the needle of a magnetometer carried by a Helicoptor which records the variations in the earth's magnetic field.

e) Motive Power Gallery

13. Model of Watt's Rotative Beam Steam Engine.

This is a model of a double acting steam engine with seperate condenser, governor, etc designed by James Watt.

14. The assembly of Friction Gears in one panel:

The assembly shows the working of different types of friction gears displayed in a panel.

15. The idealistic model of Heart Beat Engine - 2 Nos.

This is a model of a modern oil engine in which the combustion chamber itself contracts and expands with the sequence of a 4 stroke oil engine.

16. Diorama on muscle power

The Diorama shows the use of muscle power in early times.

17. A model of Brancus steam engine.

This is the first impulse type steam turbine

designed by Branca of Italy in 1629.

18. A model of a Napier Deltic Engine:

This is a model of a piston type oil engine. There are three cylinders with six pistons and three crank shafts arranged in the form of a delta.

Steam

19. A model of savery/Engine.

This is a model of an early steam engine designed by Savery to pump out water from mine.

20. A model of Wankel Auto Engine.

This is a model of a modern rotary 4 stroke oil engine with a triangular piston.

21. A model of Denys Papin's Steam Engine

This is a model of a very early piston steam engine designed by Papin to demonstrate the power of steam.

f) Mobile Science Museum

22. "Our familiar electricity"- A colourful title board shows how electricity, can be commercially produced by Hydroelectric generators and other means, and utilised for service of mankind.

23. "Different sources of electricity" - Showing Galvanis famous experiment of Zinc Copper couple and then how electricity is available from a dry cell, a wet battery and from a generating station.

24. "Generation of Electricity by Faraday's Disc" - shows how a metal disc rotating in a magnetic field develops electric current in it - a fundamental experiment conducted by Faraday.

25. "Story of Motor" - The exhibit in two parts shows how the principle of Barlow's wheel is utilised for the construction of a D.C. Motor.

26. "D.C. & A. C. Energy"- The working AC/DC generator shows how a copper coil rotating in the field of a permanent magnet gives out both direct as well as alternating electricity through commutator & slip-ring respectively.

27. "Conductivity of different metallic wires" - Shows the comparative figures of electrical conductivity of wires made of Iron, Aluminium, Copper and silver. It also shows the application of "fuse wires".

28. "Electrical connections"- Demonstrates the meanings of "close circuit, open circuit and short circuit" in the electrical circuitry.

29. "Domestic electrical Wiring" - Shows how the electric wirings run in a domestic house for supply of electricity to electric Iron, Heater, Radio, Refrigerator, Lights, Fans etc.

30. "Please Remember - Illustrations" - A set of colourful cartoon pictures indicates several precautions to be adopted for avoiding common electric shocks.

31. "Measurement of Electrical energy by an energy meter"- With the help of a working energy meter one can compare the consumption of electric energy by common house-hold appliances.

32. "Storing of electrical energy" - Shows how a condenser (capacitor) works on A.C. or D.C., and stores and releases electrical energy.

33. "Electro magnetic induction & Transformer" - Shows Faraday's induction and application of the same in the construction of power Transformer in a Radio Receiver for stepping up or stepping down voltages.

34. "Series & Parallel connections" - Shows how dry cells are connected in series, in Parallel and in series-parallel for higher voltages, current and power requirements.

35. "Connection of electric lamps" - Shows method of wirings for electrical supply to ordinary tungsten and flourescent lamps.

36. "Comparison of Illumination" - Illumination thrown on a frosted glass by different types of lamps of same wattage can be seen and compared.

37. "Electric current & Heat" - Shows how the passage of strong electric current through metallic wires can be utilised for production of heat in electric Iron and Heater.

38. "Electro-magnet & Elect. Bell" - Shows in three steps the utility of an electro-magnet in making one electric calling bell.

39. "Tesla Coil"- Shows how tube lamps can be illuminated with the help of high frequency electromagnetic field produced by a Tesla Coil.

g) Temporary Exhibition

40. Polaroid Picture:

Polarised light passing through a double refracting medium splits into two components and while again passing through a polaroid sheet recombines to produce light of different colours.

41. Ripple Tank:

The wave forms and the pattern produced when they cut are studied in this model.

42. Carbon atom

A three dimensional model showing the nucleus and electrons in different shells. Movement of the electrons is shown by light points.

43. Subtraction of colour

When disc of red, blue and yellow are made to overlap against a white background, the overlapped portion appears black.

44. Addition of Colour.

When lights of colours red, blue and

yellow are projected on a screen, so as to overlap, the overlapped portion appears white.

45. Newton's Disc.

Light, consisting of seven colours is demonstrated by painting a disc in proper proportions with the seven colours. On rotating it, white colour only is seen.

46. Burglar's alarm

A warning to the house owner is given by the sound of a bell, when a burglar tries to tamper with the safe.

47. Illusive Doll

The doll evades the touch of an intruder- a model operating on the capacitance variance due to the human body.

48. Patience tester.

A ring to be taken along a curved wire without touching it. An alarm sounds on contact.

49. Magic Picture

A picture so drawn that while half the portion of it is covered, it reads one word and when fully opened some other.

50. Shoot the Tiger

A gun, when shot projects a light spot. This spot, if it falls directly into the mouth of a tiger placed a few feet away, operates a photo electric circuit and a bell sounds and the tiger falls down.

51. Jumping Disc.

Due to eddy currents formed when alternating current passes through a coil of wire the disc is thrown up.

52. Transfer of momentum

The momentum of a body in motion is transferred to another with which it comes in contact. So contacted if a number of balls be placed only the last at the other end moves.

G) Models fabricated by our museum for the Visvesvaraya Industrial & Technological Museum, Bangalore.

The following eight models of: 53) Long slide valve, 54) Short slide valve, 55) Tricks slide, 56) Davy Paxmar Valve, 57) Piston Valve, 58) Rider's Expansion slide valve, 59) Hackworths slide valve, 60) Church's Patent slide valve - Shows working of the different types of Steam Engine valves in a Panel.

H) Donated exhibits:

i) Mobile Science Museum

contd....

1. Telephone Exchange: One can, while dialling from either of the two receiver attachments, see the actual working of switching system of this small automatic Telephone Exchange.

2. Transparent Telephone Receiver: Internal construction o a common receiver is clearly shown through the transparent perspex cover.

3. Radio Receiver Sets: Radio Receivers, both valve and transistor types, are exposed for clear identification of the minute parts. Visitors can also listen to one working Receiver housed in this exhibit.

4. Fluorescent tubes and their parts: Stage by stage construction and required accessories like choke, strater, etc for illuminating the tube lamps are shown.

5. Various types of Tungsten lamps: Stage by stage constr tion of tungsten lamps and some finished products are displayed.

6. Dry cell: Internal construction of a common dry cell shown with this highly magnified model. The materials required for preparation of the cell are also display

7. A.C. Fan: Dismembered parts of an A.C. ceiling fan ar displayed. Similar display of D.C. Fan.

8. Water pump motor: The working of a motor for lifting water is demonstrated with the help of colourful ani tion.

ii) Transport Gallery

9. Aero Engine: This is a radial type oil engine used Air Craft.

10. Rolls Royce Car: This is a Rolls Royce Motor Car of

Fiat Car: This is a car of historical importance. It was used by late Sir. J.C.Bose.

I) Construction work taken up in 1965.

1. Construction of a hall in the ground floor for setti up the Transport Gallery.

2. Construction of a temporary shed for carpentry & Pai Section.

J) Distinguished visitors

Prof. A.C.Banerjee, Ex-Vice-Chancellor, Allahabad Univ.

Prof. N.G.Dyherenfurth, Leader of Mt. Everest Expeditic 1963.

Prof. H.V.Kamath, M.P.

Mr. Justice S.K.Das.

Mr. Frances G.Jastiam, Museum of Science & Industry, Collumbia, U.S.A.

K) Constitution of the Scientific Advisory Committee

As per CSIR bye-laws, a Scientific Advisory Committee been constituted for the BITM. Names of the members a follows:-

contd.

1. Dr. T.Sen,
Vice-Chancellor,
Jadavpur University,
Calcutta. ... Chairman

2. Dr. S. Hussain Zaheer,
Director-General,
Council of Scientific &
Industrial Research,
Rafi Marg, New Delhi. ... Member

3. Dr. B.D.Nagchowdhury,
Director,
Saha Institute of Nuclear
Physics,
92, Acharya P.C.Road,
Calcutta. ... Member

4. Dr. (Mrs.) Grace Morley,
Advisor to the Govt. of India
on Museums,
National Museum,
Janpath, New Delhi. ... Member

5. Prof. G.C.Sen,
Prof-in-Charge,
Mechanical Engg. Deptt.,
Jadavpur University,
Calcutta-32. ... Member

6. Dr. Sankar Sevak Boral,
Professor of Communication,
B.E.College,
Shibpore. ... Member

7. Shri S.N.Ghosal,
Assistant Professor,
Govt. College of Arts & Crafts,
Calcutta. ... Member

8. Shri A.Bose,
Officer-in-Charge,
Visvesvaraya Industrial &
Technological Museum,
Bangalore. ... Member

9. Mr. R. Subhramaniam,
Assistant Curator,
Birla Planetarium,
Calcutta. ... Member

10. Shri S.K.Ghose,
Curator-in-Charge,
Birla Industrial &
Technological Museum,
Calcutta-19. ... Member

Shri S.K.Bagchi, Curator (Mining & Metallurgy),
BITM will act as Non-Member Secretary of this Committee.